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ON THE RELATION BETWEEN THE RESPIRATORY AND CIRCULATING FUNCTIONS.

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[Communicated for the Boston Medical and Surgical Journal.—Continued from page 362.]

2ND. *A disproportionate diminished frequency of the respiration indicates a want of energy in the nerves which control the respiratory motions.*

A lesion of function in either of the two classes of nerves principally concerned in respiration, occasions a disparity between the respiratory and circulating functions, and causes an imperfect aeration of the blood. Imperfect function of the *motor* respiratory nerves produces this effect, by causing a disproportion between the quantity of air respired, and that of the blood circulating through the lungs. Imperfect function of the *organic* or *arterializing* nerves produces the same general result, by impairing the influence of the respired air on the blood. In the former case the quantity, in the latter the effect, of the respired air is diminished. As the pathological effects are in general the same, it is proper to consider in connection, A. Imperfect aeration of the blood from disordered function of the *motor* respiratory nerves; and, B. Imperfect aeration of the blood from disordered function of the *organic* respiratory nerves.

GENERAL PATHOLOGICAL EFFECTS OF IMPERFECT AERATION OF THE BLOOD.

The celebrated French physiologist, Bichat, was the first who drew the attention of physicians to any satisfactory knowledge of the pathological effects of an imperfect arterialization of the blood. He found, by experiments, that if a current of venous blood is turned into the carotid arteries, it produces atony of the brain. If a moderate quantity of the black blood is thus transmitted by the arteries to the brain, it produces a degree of drowsiness and stupor. A large quantity produces a loss of sensation, perception and voluntary motion, and occasions coma and death. By turning, in the same manner, a current of venous blood into the main artery supplying one of the limbs, he found it to occasion a numbness and paralysis of the limb. In short, if venous blood is made to circulate through any artery of the system, it occasions a torpor of the part supplied by such artery. If the function of the lungs ceases, while the heart continues to act, the blood not arterialized circu-

lates through the whole system, occasioning a general torpor, paralysis, and death.

The effects caused by a cessation of the respiratory function, are termed *asphyxia*. The general phenomena of asphyxia produced by a sudden cessation of the respiratory function, as in hanging, drowning, &c., are well known—the heart continues to act, sending the black blood into the arteries which naturally circulate red blood; the skin and all parts of the system assume a livid color; sensation, sensibility and voluntary motion are suspended; and, with the cessation of the heart's action, death ensues. Similar phenomena occur in most diseases at the close of life; and, in the opinion of Bichat, asphyxia is by far the most common immediate cause of death. "Whatever may be the seat of the principal disease," he says, "whether it be an organic defect, or a general injury of the functions, as fever, &c., almost always, in the last moments of existence, the lungs are embarrassed; respiration becomes painful; the air is taken in and expelled with difficulty; the coloration of the blood is hardly carried on; it passes nearly black into the arteries. The organs, already debilitated by disease, receive much more easily in that state the fatal influence of the contact of this blood, than in asphyxia where they are unaffected. The loss of sensations and of intellectual functions, and very soon that of voluntary motions, succeed the embarrassed state of the lungs. The man has no longer any connection with surrounding objects; his whole animal life is interrupted, because the brain, which, as it is known, governs this life, penetrated with black blood, ceases its functions. By degrees the heart, and all the organs of internal life, imbibing this blood, cease their motions also. In this case it is the black blood which altogether stops the vital motions already enfeebled by the disease. It is in general very rare that debility produced by disease brings on death in an immediate manner; it paves the way to it, and renders the organs susceptible of being influenced by the smallest change in the red blood. But it is almost always this change which puts an end to life. The cause of the disease is therefore only an indirect cause of general death; it occasions that of the lungs, which latter brings on that of all the organs."—*Treatise on Life and Death.*

These views of Bichat, in regard to the deadening influence of the black blood on those parts of the system which are naturally supplied with red blood, are now commonly received by pathologists. Perhaps this influence is not so generally the immediate cause of death, as this author supposed; but it is probably true, that death is most commonly produced in this way. Since the publication of Bichat, the subject of this influence has received considerable attention, particularly as an immediate precursor and cause of death; while but little attention has been given to a less degree of the same influence observable in the progress of many diseases. Throughout the progress of some diseases, particularly fevers of a typhoid character, this relation between the respiration and circulation appears to have a most important influence, a correct understanding of which, it is believed, will lead to many important therapeutic indications.

A. *Imperfect aeration of the blood from disordered function of the motor respiratory nerves.*

A lesion of function of the respiratory system of nerves *impairs the motions of respiration*, causing the respiration to be infrequent and small; and in consequence, less than a natural quantity of air is respired. In this condition of the respiration, if the circulation continues strong, a disparity between these two functions occurs; the air respired is insufficient to duly aerate the blood in the lungs; and consequently the blood passes into the system imperfectly arterialized.

The deleterious effects of such impaired function of the respiratory nerves may be estimated from a consideration of the well-known deadening influence of the black blood in extreme cases of asphyxia. The imperfectly arterialized blood, though still retaining enough of its arterial character to sustain life, occasions a degree of torpor in the brain and all parts of the system supplied by the arteries. Sensation, perception, voluntary motion—all the cerebral functions—become impaired. The capillary vessels, partially paralyzed, become distended and engorged with dark-colored blood; the lips and finger nails have a livid tinge, a livid paleness pervades the whole surface, and the florid hue of health is nowhere seen. Secretion and absorption become affected; passive engorgements take place in various parts; indeed, a torpor produced by the deadening influence of the imperfectly arterialized blood pervades the whole system. The respiratory nerves, in common with other parts of the system, become affected with this paralyzing influence, which, by rendering the respiratory motions more languid, tends still further to impair the arterialization of the blood, which again reacts on the respiratory nerves. As the degree of this influence increases, the cerebral functions become more oppressed, and symptoms of approaching dissolution appear, such as coma, subsultus tendinum, colliquative discharges, and frequently tympanitic distension of the abdomen.

Typhous fever.—Something of the train of symptoms above described ordinarily occurs in typhous fever, and in other diseases of a typhoid character. The lesion of nervous function in the brain, which is a prominent characteristic of typhoid diseases, almost always extends to the respiratory system of nerves, occasioning a disparity between the respiration and the circulation. While the healthy ratio between the respiration and the pulse is 1 to 4½, in typhous fever it is commonly 1 to 5 or 6, and in many cases 1 to 7 or 8. The respiration, though often more frequent than in health, is not proportionate to the increased frequency of the pulse; and if the pulse is less frequent than natural, as sometimes occurs, there is more than a proportionate infrequency of the respiration. In most cases this relative infrequency of the respiration continues through the whole course of the disease, and during the last seven years I have never seen a case of simple typhus in which it was not remarkable in some stage of the fever.

It is true, that in this disease the heart partakes of the attending general debility, and in consequence, its action being feeble, less blood is thrown to the lungs by each contraction; from which it might seem that, notwithstanding the relative infrequency of respiration, the blood

may be sufficiently arterialized. On the contrary, however, it may be observed, that the respiratory muscles also partake of this general debility, and in consequence the respiration is feeble and small. In general, I think, the smallness of the respiration is more than proportionate to that of the pulse, so that the deficiency of arterialization is even greater than is indicated simply by the infrequency of respiration.

That the blood is imperfectly arterialized in typhus, is sufficiently evident from the symptoms of the disease. Dr. Armstrong, in giving the distinguishing signs of common continued fever and typhus, says, that "In the common continued fever, the patient commonly has not much inaptitude of mind, often answers questions readily, and in a pretty firm voice, without much increased agitation of the breathing; whereas in typhus the answers are mostly given with languid slowness and reluctance, and much speaking obviously disturbs the respiration. In the common continued fever the skin is generally of a brighter red than natural, especially on the cheeks; on the contrary, the skin is always more or less of a dusky color in typhus, and an admixture of it may be best observed in the flush of the face. This duskiness of the skin is one of the proper symptoms of typhus, and seems to arise from some change in the constitution of the blood, which I have almost invariably seen darker on dissection than in ordinary fevers. In the worst cases, this duskiness increases in the progress of the disease, and lessens in those that assume a mild aspect. So very characteristic is this cutaneous duskiness, that I think I could distinguish typhus by it at any time, if two patients were presented to me, the one laboring under that disease and the other under the common continued fever."—*On Fever*, p. 235.

In another part of his treatise (page 410), Dr. Armstrong observes, "The blood is always blacker in typhus than natural. In severe cases it is remarkably so where the excitement is fully emerged, and at last the solids are most decidedly affected, as any one may perceive who marks the dark hue of the muscles on dissection. This state of the blood in typhus, if I mistake not, is connected with that peculiar depression of strength, and with the peculiar condition of the sensorium, which attend the rise and progress of this disease. . . . . But," continues Dr. Armstrong, "the nature of this change in the blood, I do not pretend to determine, and only meant to point to it as an object worthy of far more attention than it has yet received."

Dr. Southwood Smith says, "The skin is always of a darker color than in synochus; the whole surface is of a dull and dusky tinge."—*On Fever*, page 166.

The dark color of the blood in typhus is noticed by other authors, as of common occurrence. That it "is *always* blacker than natural," as asserted by Dr. Armstrong, is questionable. Though I have always observed, in some stages of the fever, a relative infrequency of respiration, with the dark colored blood, and other symptoms necessarily attending this imperfect respiration; yet I have noticed, in the commencement or progress of some cases, an occasional acceleration of the breathing, continuing for several hours or even days, during which the cheeks assumed a florid color, and there was every indication of a perfect aera-

tion of the blood. Sometimes there is even a morbid frequency of respiration apparently depending upon irritation of the respiratory nerves, during which the skin is uncommonly florid, and there is morbid wakefulness and sometimes a phrenzied delirium. Such a state, however, is ordinarily of short continuance, and is succeeded by infrequent respiration, lividity of skin, a low delirium, subsultus tendinum, and coma—the irritative excitement being succeeded by a morbid depression of nervous energy.

No inconsiderable part of the symptoms occurring in typhus, it is believed, may be attributed to the imperfect respiration which we are considering. The "sensorial debility and disturbance of the mental powers," which are prominent characteristics of typhus, may be produced by any impediment to the respiration, preventing a proper aeration of the blood. But it is not to be supposed that this imperfect respiration is ordinarily the first link in the chain of disease in typhus. It is preceded and caused, in most cases, by a torpor of the respiratory system of nerves, which appears obviously connected with a general depression of nervous energy throughout the system. In such cases, however, the imperfect respiration cannot fail to add to the general nervous torpor, through the paralyzing influence of the black blood; and in cases of disease commencing in the lungs, a similar torpor of the nervous system is a consequent result.

I have adverted particularly to typhous fever, as a disease in which this deficient arterialization of the blood is ordinarily prominent throughout its progress. In this disease there is hardly a point requiring more careful observation for prognostic and therapeutic indications. A remarkable relative infrequency of respiration, in the early stage of the disease, indicates an alarming prognosis. If in this stage the respiration and pulse are as 1 to 7 or 8, it is almost certain that its course will be of a low typhoid character. Vertigo, tinnitus aurium, subsultus, a muttering delirium, and coma, are almost sure to succeed. If such infrequency of respiration occurs in any stage of the disease, it may be considered as the precursor of a similar train of symptoms. Those symptoms which are commonly attributed to "determination to the brain" or "congestion in the brain," are associated with, and in a great measure depending upon, this imperfect respiration.

Congestive typhus.—In that form of disease which is treated of by Armstrong and others as congestive typhus, this deficiency of respiration appears to be a prominent cause of the peculiarities characterising this form of fever.

This variety of typhus is commonly ushered in with chills, vertigo, drowsiness, and extreme general prostration; the breathing is infrequent, irregular and sighing, or in some cases frequent, but short, feeble and inefficient; the skin pale and somewhat livid; the heat of surface unequally diffused; the pulse rather frequent and irregular, or in some cases very infrequent and oppressed; sensation and voluntary motion are suddenly impaired; and subsultus, muttering delirium, and coma, soon supervene. In rapid cases the disease has a near resemblance to apoplexy. On dissection, the blood is found accumulated in the veins

and the right side of the heart; the arteries, brain, muscles, and all parts of the system are dark colored from the black blood contained in them; and the blood either remains liquid, or coagulates very imperfectly.

Dr. Southwood Smith, in describing this form of typhus, says, the patient "lies insensible, with a cold and dusky skin; with a swollen and livid countenance; with a heavy and oppressed respiration; with a pulse perhaps not to be felt, or, if distinguishable, either so rapid that it cannot be counted, so small that it is like a thread beneath the finger, and so weak that it is lost by the slightest pressure, or else slow, irregular, and intermittent. In this state the patient is almost as completely paralysed as in apoplexy, and the attack is almost as rapidly fatal as apoplexy."—*Treatise on Fever*, p. 175.

The symptoms and post-obit appearances certainly are the same as those attending asphyxia produced by inhaling certain noxious gases, by mechanical obstruction of the lungs, and by a division of the respiratory nerves; and a careful consideration of the phenomena, I think, must lead to the conclusion that imperfect respiration is a most prominent feature of the disease. These circumstances surely demand a most careful attention to the disparity between the respiration and the pulse, which attends this form of disease.

Not only in typhus, but in all diseases, when the relative frequency of the respiration is less than in the proportion of 1 to 4½, it is a sure indication of deficient aeration of the blood, unless, as in some rare cases, there is some disproportionate debility of the heart, occasioning frequent, feeble, and ineffectual contractions of that organ.

But there is, in many cases, deficient aeration, when the ratio between the frequency of the respiration and pulse is normal; and even when there is a comparative increased frequency of respiration. Typhous fever may be complicated with some affection of the bronchial membrane, preventing a free communication between the respired air and the blood within the lungs; or with some affection of the lungs or pleura, preventing a full expansion of the lungs; or with tympanitic distension of the abdomen (a common symptom in typhoid fevers), preventing a free descent of the diaphragm; or with some of the other circumstances before adverted to as occasioning a mechanical impediment to the respiratory motions. Sometimes, also, in connection with the general debility attending typhoid diseases, there is a disproportionate debility of the respiratory muscles, causing the motions of respiration to be small, feeble, and inefficient. In all such cases the blood will be imperfectly aerated, unless the relative frequency of respiration is more than natural; as the deficient fullness of respiration ought to be compensated for by increased frequency. If the cause of this impeded respiration is manifest, it will of course be considered in counting the respiration and pulse; but if the impediment is latent, the relative frequency alone might lead to an erroneous conclusion. The degree of fullness of respiration is to be considered in connection with the frequency. Commonly, however, the imperfect aeration is sufficiently evident, from the livid tinge of skin, the drowsiness, listlessness, and other symptoms which it produces.

Pneumonitis.—In this disease, especially when of a typhoid character, the symptoms of imperfect aeration of the blood are remarkably prominent. In almost all cases the frequency of respiration is considerably increased. In a moderately severe case, with pulse at 90, the respiration will be as frequent as 30 in a minute—that is, in a ratio of 1 to 3; and when the lungs are extensively engorged, the ratio is often as 1 to 2. In one sense a very frequent respiration in this disease is a bad symptom, as it indicates extensive engorgement; but while the engorgement continues, this frequent respiration is favorable, and indeed absolutely necessary to sustain life. It is desirable that the increased frequency should compensate for the pulmonary obstruction; but it is rarely fully sufficient for this purpose. The "tumid, purple face or lips," constituting a part of the definition of pneumonitis in Good and other authors, indicate that, notwithstanding the increased frequency of respiration, still the blood is imperfectly arterialised. A further increased frequency is desirable, provided there is not a corresponding increase of the pulmonary obstruction; if this obstruction is diminished, a proportionate diminished frequency of respiration is not unfavorable; but if the respiration suddenly becomes less frequent, while auscultation and percussion detect no abatement of the obstruction within the lungs, the symptom is alarming. It indicates that the nerves of respiration are losing their energy, and that imperfect aeration of the blood, with its consequences, coma, muttering delirium—in short, a fatal asphyxia—will ensue. The more typhoid is the character of the pneumonia, the greater is the danger of this failure of respiration. Indeed, in all typhoid diseases, a torpor of the respiratory nerves is to be apprehended as a common source of danger.

Typhous fever, complicated with pneumonitis, is a disease in which the effects of imperfect aeration of the blood are remarkably prominent. Dr. Southwood Smith, in treating of "typhus mitior with thoracic affection," very well describes the ordinary phenomena of this disease. "Prominent thoracic affection, as we have seen," he remarks, "is not infrequent in synochus; in typhus it is more constant; and the signs which denote its existence are more obvious, but they are not precisely the same. The pain in the chest is less severe; it is more often absent altogether; while the sense of stricture and the dyspnœa are more urgent. The cough is more constantly attended with mucous rattle; the respiration is shorter and more hurried. The skin in general is cooler, and it is always more dusky. The dark color of the skin, in severe cases becoming quite livid, is one of the most characteristic marks of intense thoracic affection. The color of the cheek is at first of a deep and vivid red; as the disease advances it becomes of a purple tinge, and at length it is quite livid. In these cases it is not uncommon for the respiration to be from forty to fifty in a minute. The pulse is invariably rapid and weak. The cerebral affection is equally peculiar and characteristic; it never consists of intense excitement; it is never accompanied with violent delirium; it is indicated by confusion and stupor passing rapidly into coma; and it is attended with low muttering incoherence or disjointed mumbling, the trains of ideas that pass through the

mind being extremely faint, and linked together by no distinguishable affinity. We know that one of the most essential conditions to the due exercise of the sensorial faculties is the due supply of the brain with arterial blood; but in this state of the system arterial blood does not and cannot circulate through the brain, because it is not formed in the lungs: the patient is in a state approaching to asphyxia, and in very severe cases he remains for several days in as perfect a state of asphyxia as seems to be compatible with life. Why debility should, in these cases, be carried to the utmost possible extent; why such cases should form the most exquisite specimens of the adynamic state, need not be pointed out: the disease is concentrated in the very organ which elaborates the pabulum of life, and that stream which should convey its vivifying and animating influence to every nook and point of the system, is corrupted at its source."—*Treatise on Fever*, p. 169.

With this clue to the prostrating influence of the black blood on the system, it is remarkable that Dr. Smith appears to have drawn no practical inference from it, even in the thoracic cases under consideration; and it is scarcely less remarkable that he should not have traced the effects of this influence in the other forms of typhus, and in other fevers. These effects of imperfect aeration of the blood are almost equally observable in the "typhus mitior with cerebral affection," and other forms of fever described by this author, and especially in typhus gravior.

The author also omits to mention the important fact that pneumonia, when occurring with typhus, is ordinarily of a *latent* character. Sometimes it manifests the thoracic symptoms which he has described; but more commonly not only the pain in the chest is "absent altogether," but no "sense of stricture" is complained of, there is no cough or expectoration, and, unless in the advanced stages, there is no "mucous rattle."

Another important omission in the detail of symptoms might seem remarkable, were it not common to most authors; in the description of one hundred and fifteen cases of fever, the number of respirations in a minute is stated in only two or three cases. That almost all authors neglect this point, while variations in the frequency of the pulse are carefully and minutely detailed, is sufficient evidence that the importance of the relative frequency of the respiration and the pulse has been most unaccountably overlooked.

Delirium tremens.—In this disease, according to my observations, there is always this imperfect respiration. Ordinarily there is a remarkable relative infrequency of respiration, even when the disease is complicated with affection of the lungs. Authors generally appear to be unaware how commonly this disease is thus complicated. In May, 1832, I lost a patient with delirium tremens, who had manifested few symptoms of pulmonary affection; but after death the lungs were found very extensively engorged. The case induced me to examine particularly for latent affection of the kind in all cases of this disease. Since that time, now six years, I have attended more than 60 cases, and have been surprised to find in every case decided indications of pulmonary engorge-

ment. In most cases there is, in the early stages, a distinct crepitation, such as ordinarily attends pneumonitis; in other cases the sound is such as indicates edematous engorgement, resembling the sound produced by squeezing a wet sponge, by wringing wet clothes, or by the effervescence of fermenting liquors. The engorgement appears to be of a passive kind, being manifested in the most depending portions of the lungs—about the posterior portions, if the patient has been lying on the back; or in the inferior lobes, if he has been long in an erect posture. I am inclined to believe that this engorgement, which prevails through the whole course of the disease, has commonly been mistaken, in post-obit examinations, for that passive accumulation in the back of the lungs which takes place in most diseases in the last moments of life, or after death. Since turning my attention to this point, my experience has coincided with that of the late Dr. David Hosack, of New York, who stated, in his lectures, that he had always found delirium tremens complicated with pulmonary disease.

As before remarked, the respiration is ordinarily infrequent. The ratio between the respiration and the pulse is sometimes 1 to 6 or 7, even when there is considerable pulmonary engorgement. This condition of the respiration accounts for the livid skin, and may be a principal cause of the cerebral perturbation and the trembling which characterize this disease.

Night-mare (Ephialtes nocturnus of Good) is unquestionably owing to imperfect respiration. This disease is described by Dr. Good, as "produced during sleep, and interrupting it with violent struggle and tremor: the pressure on the chest seeming to be that of some hideous monster or phantom." The respiration is remarkably infrequent, irregular, and interrupted; and commonly attended with a noise indicative of anxiety and distress. The mental hallucination is sometimes an apprehension of being crushed by some heavy weight, or of being violently grasped by some hideous animal, or of being smothered under a bed, or of being tightly bound or closely confined. In general, the hallucination is such as appears to have its origin in some interruption of the respiratory motions; and it is quickly dispelled by awaking, or by any external impression which excites the motions of respiration. It occurs during sleep, when respiration is deprived of the aid of the will; and is in many cases excited by a full meal taken at bed-time, which operates, in part, at least, to impede the motions of the diaphragm. It most commonly occurs when a person is lying on the back, probably because in this position the weight of the lungs presses on the ganglia and trunks of the organic nerves, and the abdominal viscera crowd against the diaphragm, more than in other postures of the body.

[To be continued.]

CASE OF ACUTE HEPATITIS.

(Concluded from page 235.)

REMARKS.—If the doctor's case can be identified with any known disease, it must be that of acute hepatitis of the membrane of the liver.

But here several symptoms were lacking to carry out the complete identity—as: 1. The absence of a chilly fit. 2. The absence of cough. 3. The absence of fever. And, 4. The speedy and sudden close of life.

Of a case of the kind so rapidly terminating in a fatal issue, I know of no instance upon record. And the inquiry will naturally arise as to the causes which should have so suddenly thrown so noble a corporeal frame into the arms of death.

We know that such sudden terminations of life take place in all great epidemics, as the communication to which I have referred at the beginning, fully portrays. Now the individual symptoms of all mortal epidemics do occasionally appear in sporadic cases. It is, however, in the present instance, difficult to conceive that the pain, although excruciating, should have so suddenly exhausted the system; because experience teaches that extreme pain, without fever, may be borne, and has often been borne, for a great length of time without producing death.

Perhaps the author is not to be found who does not insist upon a resort to the lancet in a case of acute hepatitis. Still, in the case of Dr. H., had my doubts of the propriety of using it entirely dissuaded me from its use, I now think that I should not have regretted it; although, had he died without bloodletting, as he himself wished to be bled, and as the authority of the medical world was in its favor, it is not certain but my regrets would have been still greater.

It is to be considered that the article entitled MORS EPIDEMICA, in your Journal, was not published till long after the occurrence of this case. And with great propriety may the remarks therein contained be made to embrace sporadic cases, as it so well does epidemics.

It may easily be believed that I could not let the examination pass before me without having an eye to the discovery of the causes of the doctor's constitutional, perhaps *hereditary*,* malady—extreme hypochondriasis. There was nothing, however, discovered of that state of chronically diseased viscera which our great writers describe. But here we must beg leave to make a few remarks of our own. Whether they will be well received or not, we cannot tell. No one ventures to travel a new and untrodden path, without having some apprehensions of getting lost. Suffice it to say, that that path has not yet been found out which leads to the source of this most *uncomfortable* of all human maladies—hypochondriasis.

That the seat of hypochondriacal complaints is in the abdominal viscera, will be taken for granted; at least with us, and, as we think, will be contested by none. When, therefore, we saw the colon lying far out of its place, so as perhaps to be quite three inches higher than in other subjects, our theory embraced the fact, that hypochondriasis might be owing to *error loci of the viscera*. For the colon could not have been thus displaced without the other viscera suffering also. The stomach must have been pressed upward and backward. Hence dyspepsia and all its train of evils, so apparent, so long continued, so distressing, and

* The writer of this article attended an aged maternal uncle of the doctor's, who was afflicted with the same hereditary-headed malady—monster.

so hard to remove. Hence that most effectual of all our remedial agents, riding on horseback. And in this identical case I happened to know that the health and happiness of Dr. H. depended very much upon this mode of gestation. Yours, &c.

Lebanon (Conn.), April 26, 1838. JOSEPH COMSTOCK.

P. S.—The smoking moderately of tobacco is one of the very best remedies, besides riding, for dyspepsia. But the mode of its operation had long puzzled me, until, in connection with this case and dissection, I considered its antispasmodic properties, and its tendency to quicken the peristaltic motion. One thing further. Those who have hernia, when the intestine is out of place, undergo constant dragging, unbearable uneasiness without pain, similar to the never-ceasing complaints of the hypochondriac. J. C.

MEDICAL BOTANY.

BY SAMUEL A. TOOTHAKER, M.D.

To the Editor of the Boston Medical and Surgical Journal.

SIR,—After a lapse of some months, I now propose to continue my communications for the Journal, on Medical Botany; not so much with a view to instruct others, as to call the attention of the profession to a few plants, and to elicit facts from those better acquainted than myself with their therapeutic properties. S. A. T.

NO. IX.—HERACLEUM. MASTERWORT. COW-PARSNIP.

Sex. Syst.—Class pentandria; order digynia. *Nat. Order.*—Umbelliferæ. *Gen. Char.*—*Fruit* with a membranaceous margin; *ribs* three, dorsal, obtuse; *intervals and commissure* with clavate spots; *flowers* sub-radiant; *involucre* none or irregular, caducous.

Specif. Descrip.—*Heracleum lanatum.* Leaves ternate, petiolate, tomentose beneath; leaflets petioled, round-cordate, lobed; fruit orbicular or elliptical, emarginate. It is abundant in many parts of the Eastern and Middle States. It may be found in Dorchester and in Billerica. It grows in wet meadows, and flowers in June; has a large, perennial, fibrous root. Stem from three to five feet high, thick, tubular, pubescent; umbels large; flowers white. This is one of the largest and most beautiful of our indigenous, umbelliferous plants, but its chief importance is as a remedy. It has been noticed by a few medical writers, but its value is not generally known to physicians. It was called heracleum spondylium in the first editions of Thacher's Dispensatory; and by Dr. Orne, *spondylium vulgare hirsutum*, probably from the idea that it was specifically the same plant as the oriental cow-parsnip, known by both of these names. The heracleum spondylium of Linnæus; *foliolis, pinnatifidis, lævibus; floribus uniformibus*, is an exotic, called *cow-parsnip, all-heal, &c.*, "which in Siberia grows extremely high, and appears to have virtues in the cure of dysentery." It has been used for the

bite of serpents. Torrey, Eaton, Bigelow, Wood, Michaux, and Willdenow, all agree in calling the American cow-parsnip *heracleum lanatum.*

Masterwort is a name which has commonly been given to another plant not indigenous to this country, the imperitoria obstruthium; but it is now, equally with *cow-parsnip*, given to the heracleum. Neither the *wild parsnip* nor *Alexanders* (Smyrnium aureum) need be mistaken for heracleum.

The parts of this plant most used in medicine are the seeds and root. Of their comparative value I am yet uncertain. Dr. Bigelow says, "Its taste is strong and acrid. The bruised root or leaves, externally applied, excite rubefaction. It appears to possess a virose character, and should be used with caution, especially when gathered from a watery or damp situation." The dried root has an unpleasant smell, somewhat resembling that of valerian, and a nauseous, bitter, pungent taste. The seeds have a somewhat fragrant odor, and an aromatic, pungent taste. I have known the latter used freely as a remedy, for some years, without the slightest symptom of a poisonous effect being caused by them. I have also used them freely since engaged in practice, and have taken them myself, without ever witnessing any effect of this kind. Yet I am inclined to believe they are possessed slightly of a narcotic principle. They are a valuable stimulant and carminative, and probably possess deobstruent and anodyne properties. I have found them of considerable service in gastric and hepatic affections, given in combination with laxative or cathartic medicines. They are a valuable adjuvant to senna and salts. I have given them with good success for the relief of severe strangury pains, and believe them to act as a diuretic to some extent. By infusion they probably lose a part of their valuable properties. They may be given in substance or tincture. A strong tincture is easily made of them with alcohol, of which a drachm or two may be given at a time, and repeated as occasion may require. In substance from 10 to 30 grains may be taken for a dose.

Perhaps the root may possess more of a narcotic principle than the seeds, but I have eaten a scruple of the dried root without inconvenience. Dr. Orne seems to have cured three cases out of five of epilepsy by the free use of this plant, giving two or three drachms of the dried root daily, and a strong infusion of the tops. "In the hands of other practitioners," says Dr. Thacher, "this plant has manifested considerable efficacy, exerting its peculiar powers immediately on the stomach as an excellent carminative, and, if it does not cure epilepsy, it generally mitigates the distressing symptoms attending that disease. In some cases of dyspepsia, accompanied with flatulences and cardialgia, a strong decoction of this plant has been given by Dr. Mann with satisfactory success." Another writer says, "The roots are carminative and anti-hysteric. They remove hysterical complaints, flatulence, vertigo, dimness of sight, trembling and anxiety—help the appetite, and have cured the epilepsy."—*Family Physician.*

There is little reason to doubt the value of heracleum as a remedy for dyspepsia, oppression at the præcordia, vertigo, palpitation, &c., when depending on an atonic state of the stomach, causing flatulence and

acidity; and, as such affections are common in hysteria, it would doubtless relieve those symptoms, if it did not exert a direct influence on the disease. It may act efficiently in suppressed catamenia, and perhaps in some cases of amenorrhœa and dysmenorrhœa may have a salutary effect.

The seeds are highly charged with a volatile, aromatic oil, in which probably much of their peculiar properties reside. I have never seen this circumstance alluded to, but am perfectly satisfied of the fact, and that by distillation they would yield an essential oil in considerable quantity. If to the alcoholic tincture an equal quantity of water be added, the oil will be seen floating, and, after shaking, a whitish mixture will be formed.

Cambridgeport, May, 1838.

BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON, MAY 23, 1838.

LOUISVILLE JOURNAL OF MEDICINE AND SURGERY.

With the triumphant establishment of the new school of medicine, at Louisville, Ky., a new quarterly Journal has also been ushered into being under the guiding influence of the faculty of the Institute. The specimen number is exceedingly creditable in external appearance, which is something of a recommendation in the eye of the world. But its real character is developed in its pages; and as far as we can discover, it is destined to become a high toned, elevated, spirited, and in all respects a valuable repository of western medical literature and science. Some of the leading articles are too heavy—a fault which can easily be obviated in future numbers. Dr. Brent's paper on the Extraction of Nasal Polypus; Dr. Bell's miscellaneous cases, with remarks; and Dr. Rodger's Fatal Case of Rupture of the Uterus occurring at the fifth month of utero-gestation, &c., are decidedly valuable contributions. Professor Caldwell is without a rival in this country, as a strictly medical writer. There is strength and peculiar vigor in every line of his inditing—and yet he seems not always to be appreciated, because he is not always understood. When he designs to be severe, he makes enemies; and when the lion is in a playful mood, the smaller animals are afraid to trust themselves too near the lair. With our best wishes for the individual success of the different chairs of the Institute, and for the Journal, too, which must ultimately become its special herald, we can heartily recommend both to the encouragement and direct patronage of the medical profession.

Dr. Hooker's Essay.—The reader will derive much advantage from a careful examination of Dr. Hooker's paper continued in this day's Journal. He is a thorough and patient investigator, and therefore comes before the medical public in a way to command their respect.

Scarcity of Leeches.—A complaint has been repeatedly made, of late, that leeches are too scarce in this city, and consequently those for whom they are prescribed are often obliged to pay much more than they can well afford. The sick ought not to be subjected to an unreasonable expense. Whether the market is kept purposely poorly supplied, or whether there has been a difficulty in procuring a sufficient supply from abroad, has not been ascertained. The effort of the Massachusetts Medical Society to rear leeches at home, in sufficient abundance to meet the demand, is not likely to succeed, as was at one time anticipated.

Retreat for Invalids.—Practitioners desirous of procuring a temporary residence for their patients, in the country, remote from the business, the noise, and the impure atmosphere of the city during the heat of summer, may direct them with confidence to the Retreat under the care of Dr. A. Wilder, in the quiet, rural town of Groton, in the County of Middlesex, about forty miles from Boston.

The Philadelphia System of Midwifery.—It is gratifying to learn that Dr. Meigs's recent work is well received by those best qualified to appreciate its value. If it could be sold a little cheaper, very many in the country would purchase, who now deny themselves what they actually consider a desirable acquisition, simply because nothing *dear*, in the book way, can be afforded. Let it be recollected by publishers that country practitioners, in the small towns of the interior, receive but little money for their services, and that irregularly. Books must be fitted to the times, and to the circumstances of those for whom they are designed.

English Physicians in France.—The affair of the English physicians at Boulogne has terminated in the condemnation of Drs. Carter, Scott, Shuter, Allatt, and Galbraith, to the payment of a trifling fine, which, however, is equivalent to an interdiction from practising medicine in France. This decision has naturally been very unsatisfactory to the English residents at Boulogne, who have forwarded a petition to the King of the French on the subject; but their application will, probably, be of no avail, for we have been informed that, at a recent meeting of the Senate of the University of France, not less than ten demands from foreign physicians for permission to practise, have met with a decided refusal. A leading French medical journal suggests, that physicians furnished with diplomas from any foreign university or chartered body, should be immediately admitted to the final examination (at a reduced fee) before the Faculty of Medicine of Paris. This appears to be the only feasible way of compromising the matter.—*London Lancet.*

Cinchona Bark.—From various arguments adduced it appears that all the useful constituents of Peruvian bark may be obtained by the aid of menstrua slightly impregnated with alcohol and spirituous ethers, or with acids. With a view to investigate this subject, Dr. Hancock commenced various experiments in the year 1826; the main results were briefly these: the simple infusion of the bark in plain water became fœtid in three or four days, losing its faint cinchonic odor, and having no taste

of the bark; others, with the addition of acids, retained their taste and odor for months.—*Ibid.*

Medical Miscellany.—In 161 towns in New Hampshire, in which the population was 193,569, there were 312 maniacs—and most of these wretched creatures are confined to dungeons or cages, or loaded with chains, to the everlasting disgrace of that otherwise civilized State.—A human skeleton has been brought to Baltimore from the Rocky Mountains, near the head waters of the Missouri, measuring *eight feet and nine inches in height*, and weighing *one hundred and eighty pounds*.—The Vermont Mercury speaks of the medical school at Woodstock as being very prosperous.—The Emperor of Russia has ordered Baron Heurteloup to procure some lithotrical instruments, especially directing that they shall be made in London, with which the Parisian instrument-makers are not very well pleased. One of them, M. Charriere, has offered a prize of 500 francs to the English maker who will manufacture one as good as his, Baron Heurteloup to be the judge.—A family were lately poisoned in Galena, by eating a quantity of the root of the water-parsnip.—Dr. Frost, lately tried in Springfield, Mass., for mal-practice in a case of fracture of the leg, has had a verdict rendered in his favor.—Dr. Automarchi, the physician who accompanied Napoleon to St. Helena, recently died of yellow fever at St. Jago de Cuba.—A family were lately poisoned in Bloomfield, Ct., by the use of the *veratrum viride*, or poke root, which was mixed with the greens partaken of at dinner. By free vomiting and diffusible stimulus, together with external irritants to the region of the stomach, and heat, the powers of nature were aroused, and the patients recovered.—The Thomsonians have lately published a letter from Prof. Tully, of New Haven, on lobelia inflata, in which he states that he has employed this article for 27 years, and witnessed its employment by others, without discovering the least trace of any narcotic effect from it, and he therefore considers it entirely destitute of narcotic power. Dr. Bigelow, and our correspondent "A." in the last volume of the Journal, consider it narcotic.—Of three ourang outangs, which were shipped for this country, one has lately arrived in Boston. An opportunity was offered on their passage to test the effect on them of exclusive vegetable food, the result of which was, if the published accounts are correct, the death of two, and the rapid decline of the other, which was saved only by the liberal supply of animal food. The dental apparatus of these animals much resembles that of man.—The smallpox has broken out in the State prison at Trenton, N. J. The first person who fell sick had been in solitary confinement more than a year.—A new medical work is in press at Louisville, Ky., by Dr. J. C. Gunn.—In 1802, a revolutionary soldier, whose name was Kittering, revealed to the Legislature of Pennsylvania a *specific for hydrophobia*. It was the herb *chick weed*, anagallis phœnicea; given, when dry and pulverized, from a drachm to a scruple dose, in beer, which proved to be about as efficient as pulverized sawdust.—A physician, in Michigan, has been committed to jail on the charge of having poisoned a patient, the husband of a very fair lady.—The Commissioners of the Greenwich Hospital advertise, in the London Morning Herald, that they wish to contract for two thousand eight hundred tons of New Castle coals.—Pneumonia attacks new-born children much more frequently than is commonly supposed to be the case; it is too often mistaken for common catarrh, from which, indeed, it is not easy to distinguish it.

To Correspondents, &c.—The communication from Dr. Barber, of Illinois, is added to our list of accepted articles.—Mr. Cambell, the publisher, will please accept our thanks for an early copy of a little treatise on Epidemic Diseases. In the mass of pamphlets, books, letters, &c., which have accumulated upon our hands of late, this must take its turn. Owing to the length of several communications, which are necessarily continued through successive numbers of the Journal, many editorial paragraphs relating to passing medical events, have been postponed, till, in fact, the interest in them has passed by. With regard to books, however, those which are rightly in the order of professional chronicles will not be forgotten. Our friends and correspondents, therefore, with these explanations, it is hoped, will not consider themselves intentionally neglected.—The meeting of the Massachusetts Medical Society takes place on Wednesday next, instead of Monday, as incorrectly stated a few weeks ago.

Whole number of deaths in Boston for the week ending May 19th, 22. Males, 10—Females, 12.
Consumption, 2—marasmus, 1—old age, 3—measles, 1—disease of spine, 1—inflammation of the bowels, 1—inflammation, 1—debility, 1—dropsy on the brain, 1—scrofula, 1—pleurisy fever, 1—disease of the heart, 1—scirrhus of the omentum, 1—ovarian dropsy, 1—dropsy, 1—infantile, 1—stillborn, 1.

MASSACHUSETTS MEDICAL SOCIETY.

The Annual Meeting of the Massachusetts Medical Society will be held at the Society's Room, Athenæum Building, Pearl Street, on WEDNESDAY, 30th inst., at 10 o'clock, A. M. The annual discourse will be delivered at 1 o'clock by Ebenezer Alden, M.D. Literary gentlemen interested in medical science, and students in medicine, are respectfully invited to attend.

A stated meeting of the Counsellors will be held on the day following, at the same time and place.

JOHN HOMANS, *Rec. Sec.*

M16—3w

MEDICAL INSTRUCTION.

The subscribers are associated for the purpose of giving a complete course of medical instruction, and will receive pupils on the following terms:

The pupils will be admitted to the practice of the Massachusetts General Hospital, and will receive clinical lectures on the cases they witness there. Instruction, by lectures or examinations, will be given in the intervals of the public lectures, every week day.

On Midwifery, and the Diseases of Women and Children, and on Chemistry, by Dr. Channing.
On Physiology, Pathology, Therapeutics, and Materia Medica, " Dr. Ware.
On the Principles and Practice of Surgery, " Dr. Otis.
On Anatomy, " Dr. Lewis.

The students are provided with a room in Dr. Lewis's house, where they have access to a large library. Lights and fuel without any charge. The opportunities for acquiring a knowledge of Anatomy are not inferior to any in the country.

The fees are $100—to be paid in advance. No credit given, except on sufficient security of some person in Boston, nor for a longer period than six months.

Applications are to be made to Dr. Walter Channing, Tremont Street, opposite the Tremont House, Boston.

WALTER CHANNING,
JOHN WARE,
GEORGE W. OTIS, JR.
WINSLOW LEWIS, JR.

Oct. 18—tf

TO MEDICAL STUDENTS

The undersigned are associated for the purpose of instructing in all the branches of Medicine and Surgery. A suitable room will be provided, and pupils will have the use of an extensive medical library, opportunities for seeing the practice of one of the districts of the Dispensary and of the Eye and Ear Infirmary, and of attending a course of lectures on the diseases of the eye.

A regular course of recitations and examinations will include all the required professional works.

An anatomical instruction and private dissection will form a prominent part in the study of the pupils.

For further information, apply to either of the subscribers.

JOHN JEFFRIES, M.D.
R. W. HOOPER, M.D.
JOHN H. DIX, M.D.

Franklin Street, Nov. 9, 1836. July 19—6m

MEDICAL INSTRUCTION.

The subscriber proposes to take a few medical students, and to connect a small school with his private establishment for the treatment of invalids and for surgical operations. He has procured convenient rooms, and has secured the necessary facilities for anatomical inquiries and demonstrations. His pupils will also have the privilege of witnessing such interesting and important cases as occur in the private practice of a country physician and surgeon.

JOSEPH H. FLINT.

Springfield, January, 1838. Jan. 17.

THE BOSTON MEDICAL AND SURGICAL JOURNAL is published every Wednesday, by D. CLAPP, JR. at 184 Washington Street, corner of Franklin Street, to whom all communications must be addressed, *post-paid*. It is also published in Monthly Parts, each Part containing the weekly numbers of the preceding month, stitched in a cover. J. V. C. SMITH, M.D. Editor.—Price $3.00 a year in advance, $3.50 after three months, and $4.00 if not paid within the year.—Agents allowed every seventh copy *gratis*.—Orders from a distance must be accompanied by payment in advance, or satisfactory reference.—Postage the same as for a Newspaper.

THE

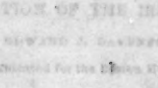
BOSTON MEDICAL AND SURGICAL JOURNAL.

VOL. XVIII.] WEDNESDAY, MAY 30, 1838. [NO. 27.

CASES OF LACERATION OF THE IRIS (WITH A COLORED PLATE.)

BY EDWARD A. GARDNER, M.D., BOSTON.

Laceration of the iris is not an infrequent result of blows and injuries of the eye, and it usually takes place at the union of that membrane with the ciliary ligament. The natural tendency of the iris to become separated, in cases of violence to the eye, from the ciliary ligament, led Scarpa to propose the formation of artificial pupil by cutting it from that part. With the [illegible] modern surgery seems to [illegible] adopted in cases [illegible] of the pupil; but the artificial pupil, so formed [illegible] to be more liable [illegible] the result of accident. Laceration of the iris [illegible] a natural pupil, is apt [illegible] and, in most instances, a patch more [illegible] opposite to that place, and more or less of the iris may be lost, either by the process of absorption or by a prolapse through a wound in the cornea.



A case of laceration and absorption of the iris is mentioned by Wardrop, in which "a thorn having penetrated the eye, after the subsequent inflammation was removed, the whole of the iris was found to have disappeared, except a very narrow stripe, which extended across the eyeball. The vision of this eye remained extremely indistinct, when assisted with a convex glass, or by looking through a small hole made in a card."

The following case is offered as an illustration of laceration and prolapse, while at the same time it presents a remarkable instance of the recovery of the eye from the effects of severe injury, in a great measure by the spontaneous efforts of nature.

Thursday, 20th September, Bartholomew Kearney, a [illegible] laborer, received a violent blow upon the left eye, from a [illegible] stone. I saw him soon after the accident, and found, upon examination, an irregular and triangular wound, about 4 lines in extent, of the upper and outer part of the cornea; a considerable portion of the ciliary and outer part of the iris, torn from the ciliary ligament, protruded through the wound and hung down upon the eyelid; the anterior and posterior chamber of the eye were filled with dark blood, so as entirely to conceal from view the pupil and remainder of the iris; the cornea was rendered [illegible] by the pressure of the contents of the globe, and

Laceration of the Iris - with vision unimpaired.